

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-2. (cancelled)

3. (currently amended) An illumination device ~~having~~ comprising:

[[-]] a light source [[(1)]];

[[-]] an optical waveguide;

[[-]] a coupling-in optical system [[(3)]] which couples the light of said light source [[(1)]] into a first end of said waveguide;

[[-]] a coupling-out optical system [[(5)]] which couples out the light emerging from a second end of said optical waveguide; [[and]]

[[-]] an illuminating optical system ~~(17; 20)~~ which receives the light emerging from said coupling-out optical system [[(5)]] and illuminates an image ~~field~~, field;

~~comprising~~:

[[a)] an optical fiber bundle [[(4)]] which is arranged as said optical waveguide; and

[[b)] a homogenizing optical system [[(6)]] which is arranged between said coupling-out optical system [[(5)]] and said illuminating optical system ~~(17; 20)~~, wherein said homogenizing optical system [[(6)]] homogenizes the nonuniform intensity distribution in the image field of the light emerging from said optical fiber bundle [[(4)],

[[c)] wherein the light of said light source [[(1)]] is picked off via said couplingin optical system [[(3)]] having a large numerical entrance aperture and is coupled into said optical fiber bundle [[(4)].

4. (currently amended) An ~~illumination~~ illumination device ~~having~~ comprising:

[-] a light source [(1)];

[-] an optical waveguide;

[-] a coupling-in optical system [(3)] which couples the light of said light source [(1)] into a first end of said waveguide;

[-] a coupling-out optical system [(5)] which couples out the light emerging from a second end of said optical waveguide; [and]

[-] an illuminating optical system ~~(17; 20)~~ which receives the light emerging from said coupling-out optical system [(5)] and illuminates an image ~~field~~, field;

~~comprising~~:

[(d)] an optical fiber bundle [(4)] which is arranged as said optical waveguide; and

[(e)] a homogenizing optical system [(6)] which is arranged between said coupling-out optical system [(5)] and said illuminating optical system ~~(17; 20)~~, wherein said homogenizing optical system [(6)] homogenizes the nonuniform intensity distribution in the image field of the light emerging from said optical fiber bundle [(4)],

[(f)] wherein the light of said light source [(1)] is picked off via said coupling in optical system [(3)] having a large numerical entrance aperture $NA \geq 0.60$ and is coupled into said optical fiber bundle [(4)].

5-6. (cancelled)

7. (currently amended) A coordinate measuring instrument ~~having~~ comprising:

[-] a horizontally X-Y displaceable measurement stage [(26)] for receiving a substrate with a feature [(31)] that is to be measured;

[[-]] an illumination system with a light source [[(1)]], an optical waveguide [[(4)]], a coupling-in optical system [[(3)]] before the optical waveguide [[(4)]], a coupling-out optical system [[(5)]] after the optical waveguide [[(4)]], and an illuminating optical system (17; 20) for illuminating an image field; [[and]]

[[-]] a detector device [[(14)]] for determining the position of the ~~feature~~, ~~comprising: feature~~; feature;

[[a]] an optical fiber bundle [[(4)]] which is arranged as said optical waveguide; and

[[b]] a homogenizing optical system [[(6)]] which is arranged between said coupling-out optical system [[(5)]] and said illuminating optical system (17; 20), said homogenizing optical system [[(6)]] homogenizes the nonuniform intensity distribution in the image field of the light emerging from the optical fiber ~~bundle (4)~~; bundle.

[[c]] wherein the light of said light source [[(1)]] is picked off via said ~~coupling-in~~ coupling-in optical system [[(5)]] with a large numerical entrance aperture, and is coupled into said optical fiber bundle [[(4)]].

8. (currently amended) A coordinate measuring instrument ~~having~~ comprising:

[[-]] a horizontally X-Y displaceable measurement stage [[(26)]] for receiving a substrate with a feature [[(31)]] that is to be measured;

[[-]] an illumination system with a light source [[(1)]], an optical waveguide [[(4)]], a coupling-in optical system [[(3)]] before the optical waveguide [[(4)]], a coupling-out optical system [[(5)]] after the optical waveguide [[(4)]], and an illuminating optical system (17; 20) for illuminating an image field; [[and]]

[[-]] a detector device [[(14)]] for determining the position of the ~~feature~~, ~~comprising: feature~~; feature;

[[a]] an optical fiber bundle [[(4)]] which is arranged as said optical waveguide; and

[[d]] a homogenizing optical system [[(6)]] which is arranged between said coupling-out optical system [[(5)]] and said illuminating optical system ~~(17; 20)~~, said homogenizing optical system [[(6)]] homogenizes the nonuniform intensity distribution in the image field of the light emerging from the optical fiber ~~bundle (4)~~. bundle.

[[e]] wherein the light of said light source [[(1)]] is picked off via said couplingin optical system [[(5)]] with a large numerical entrance aperture $NA \geq 0.60$, and is coupled into said optical fiber bundle [[(4)]].